WHAT IS CLAIMED IS:

1. A heater chip for an inkjet printhead, comprising:

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to less than 250 micrometers squared and the heater thickness is in a range from about 500 to about 6000 angstroms.

2. The heater chip of claim 1, wherein the overcoat layer comprises a passivation layer and a cavitation layer.

3. The heater chip of claim 2, wherein the passivation layer comprises a dielectric layer.

4. The heater chip of claim 1, wherein an energy to emit an ink drop from the heater chip during use is in a range from about 0.007 to about 0.06 microjoules.

5. The heater chip of claim 1, wherein the thermal barrier layer is at least about 1 micron in thickness.

6. An inkjet printhead, comprising:

a housing; and

a heater chip attached to the housing, the heater chip having

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer and the conductor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to less than 250 micrometers squared and the heater thickness is in a range from about 500 to about 5000 angstroms.

7. The printhead of claim 6, wherein the housing comprises a supply of ink and the heater chip has an ink via in fluidic access with the supply of ink.

8. The printhead of claim 6, further comprising a TAB circuit electrically connected to a bond pad on the heater chip.

9. An inkjet printer, comprising:

at least one printhead having a supply of ink and a heater chip, the heater chip having

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer and the conductor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to about 350 micrometers squared and the heater thickness is less than 1100 angstroms; and

a carriage for holding the at least one printhead capable of reciprocating movement over a print zone during use.

10. The printer of claim 9, wherein the supply of ink is locally configured within a housing of the printhead.

11. A heater chip for an inkjet printhead, comprising:

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer, comprised of a passivation layer and a cavitation layer, having an overcoat thickness on the resistor layer and the conductor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length, the heater width and the heater thickness define a heater, the heater length multiplied by the heater width is in a range from about 50 to about 350 micrometers squared and the heater thickness is in a range from about 500 to about 6000 angstroms and the heater is adapted to emit an ink drop with an energy pulse in a range from about 0.007 to about 0.83 microjoules.

12. The heater chip of claim 11, wherein the passivation layer is selected from at least one of a silicon nitride, a silicon carbide and a diamond like carbon layer.

13. The heater chip of claim 11, wherein the conductor layer has an anode and a cathode, a distance between the anode and cathode on a surface of the resistor layer defining the heater length.

14. The heater chip of claim 11, wherein the cavitation layer is a tantalum layer.

15. The heater chip of claim 11, wherein the resistor layer is a layer having at least one of Hf, Ta, Ti, W, HfB_2, Ta_2N, TaAl(N,O), TaAlSi, TaSiC, Ta/TaAl layered resistor, Ti(N,O) and WSi(O) therein.

16. A heater chip for an inkjet printhead, comprising:

a substrate;

an ink via in the substrate adapted to receive a supply of ink from the printhead;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer, the conductor layer having an anode and a cathode with a distance between the anode and the cathode on a surface of the resistor layer defining a heater length; and

an overcoat layer, comprised of a passivation layer and a cavitation layer, having an overcoat thickness on the resistor layer and the conductor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length, the heater width and the heater thickness define a heater, the heater being arranged adjacent the ink via wherein the heater length multiplied by the heater width is in a range from about 50 to about 350 micrometers squared and the heater thickness is in a range from about 500 to about 5000 angstroms, the heater being adapted to emit an ink drop of the supply of ink with an energy pulse applied to the conductor layer in a range from about 0.007 to about 0.69 microjoules.

17. A heater chip for an inkjet printhead, comprising:

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is less than about 400

micrometers squared and the heater thickness is less than about 4000 angstroms and wherein an energy to emit an ink drop from the heater chip during use is less than about 0.64 microjoules.

18. The heater chip of claim 17, wherein the overcoat layer comprises a passivation layer and a cavitation layer.

19. The heater chip of claim 18, wherein the passivation layer comprises a dielectric layer.

20. The heater chip of claim 19, wherein the thermal barrier layer is at least about 1 micron in thickness.

21. A heater chip for an inkjet printhead, comprising:

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to about 500 micrometers squared and the heater thickness is in a range from about 500 to about 1000 angstroms.

22. A heater chip for an inkjet printhead, comprising:

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to about 350 micrometers squared and the heater thickness is in a range from about 500 to less than about 1000 angstroms.

23. A heater chip for an inkjet printhead, comprising:

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is less than about 400 micrometers squared and the heater thickness is less than 1100 angstroms.

24. A heater chip for an inkjet printhead, comprising:

a substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is less than about 400 micrometers squared and the heater thickness is in a range from about 500 to about 6000 angstroms.

25. A heater chip for an inkjet printhead, comprising:

a substrate;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and

an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to about 500 micrometers squared and the heater thickness is in a range from about 500 to less than about 1000 angstroms.